A Promise of Lifelong Bone Health

California's Action Plan
to Prevent Osteoporosis

California Osteoporosis Network

2005- 2015

About Cope

The **California Department of Health Services Osteoporosis Prevention and Education (COPE)** program was established in 1999 by AB 161 (Alquist) to promote, develop, and implement sound public health interventions for the prevention of osteoporosis and osteoporosis-related disability for Californians 50 years of age and older. The COPE program provides leadership and expertise to expand education and promote action on osteoporosis. The program helps community-based organizations and healthcare practitioners translate research into practice, strengthens public/private collaboration, and convenes multidisciplinary action teams.

Acknowledgements

In 2003, COPE initiated a strategic planning process that engaged stakeholders from around the state in developing an action plan to address osteoporosis in California.

The COPE Program wishes to thank all of the individuals and practitioners from a multitude of public and private organizations, associations, disciplines and communities who brought their experience, expertise and commitment to make this action plan possible. It is our hope that this plan marks the beginning of a sustained effort in California to build a future where lifelong bone health is the norm. We are truly grateful for their contributions and dedicate this final document to the members of the Planning Committee, Summit participants, staff and reviewers and the Foundation for Osteoporosis Research and Education who provided organizational support for the planning process. Funding and support for this plan came from the California Department of Health Services, Procter and Gamble Pharmaceuticals and Kyphon.

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Call to Action

California's Action Plan to Prevent Osteoporosis is designed as a tool for collaboration, advocacy, resource development, and action to promote bone health among Californians of all ages. The aim of The Plan is to address the looming public health problem posed by the increased prevalence of osteoporosis, a debilitating disease that causes pain, disfigurement, and dangerous hip and spine fractures that often result in loss of mobility and early death. The costs of osteoporosis in human and financial terms are high and will grow even higher over time as our population increasingly ages.

The good news is that osteoporosis is preventable and treatable. We can prevent the rise in incidence of osteoporosis and intervene early to prevent dangerous and costly fractures and poor quality of life among more and more aging Californians. With this Plan, California can meet the challenge and become a model for the nation in bone health promotion and osteoporosis prevention.

The Plan proposes strategies to address the fundamental bone health and osteoporosis issues in California through activities that will:

- Improve awareness and education of Californians, their policymakers, and their healthcare providers
- Strengthen diagnosis, intervention and treatment services for all Californians, including those who are underserved or disadvantaged by poverty or racial, cultural and language differences
- Develop health care system and public health polices that support access to osteoporosis prevention, early intervention and treatment services for all Californians
- Increase knowledge and understanding of the disease and assess the impact of The Plan

Osteoporosis affects everyone and everyone can impact it. Using what we know about osteoporosis and bone health, the time to act is now. The Plan offers a blueprint for action for communities and community-based organizations, public health agencies at the state and local levels, healthcare professionals and institutions, and policymakers. Collaboration and cooperation are the hallmarks of The Plan. To succeed, resources and action from many levels and sources are needed.

Many partners are needed to achieve a promise of lifelong bone health for Californians:

Individuals and Families can educate themselves about osteoporosis, adopt lifelong bone healthy behaviors, and encourage regular screening of all family members, particularly those family members in middle age and beyond.

Health Care Professionals can include bone health assessments as part of regular wellness visits, look for red flags and assess for secondary osteoporosis in those with other diseases, educate their patients about bone health and healthy lifestyles, and recognize that fractures may signal bone disease and refer patients for assessment and treatment if warranted.

Health Systems, Hospitals, Health Plans, and Insurers can implement systems-wide bone health promotion strategies, develop practices to refer patients with fractures for osteoporosis assessment, promote bone health education and practices among providers, and adopt insurance policies that cover bone health services.

Government (Federal, state, and local governmental agencies and elected officials) can support public education and treatment services, coordinate action across sectors, promote research and conduct surveillance, link complementary programs, promote bone healthy environments and assure access to services for all populations.

Communities and Community-Based Organizations can promote bone-friendly communities and schools, increase access to information, and prevention and intervention programs for diverse populations, promote nutrition, physical activity and screening.

Voluntary Health Organizations can work with state and local agencies and communities to raise awareness about bone health and bone diseases, advocate for bone health programs for diverse populations, promote community environments that support healthy lifestyles, provide guidance for planning and implementation at the state and local levels, and convene local public and private organizations, agencies and providers for action.

Professional Associations can facilitate training and education of health care professionals, advocate for bone health curricula in professional schools and continuing education, and develop and disseminate guidelines and standards of care for bone health.

Academic Institutions can develop and implement bone health curricula for health care professionals, educate the public about bone health, and advance research on bone health.

Employers and Health Care Purchasers can promote healthy lifestyles for employees, adopt policies that allow for preventive, diagnostic and therapeutic services for all who need them, and advocate for provisions for bone health in policies.

Industry can provide information to professionals, program developers and the public, and develop and promote therapeutic tools and diagnostic technologies.

Osteoporosis: Understanding the Problem

Osteoporosis is a preventable, treatable, and potentially avoidable disease threatening almost 5 million Californians over the age of 50. By the year 2020, one in two Americans over the age of 50 is expected to have or be at risk of developing osteoporosis of the hip, and even more will be at risk of developing osteoporosis at any site in the skeleton. (DHHS, A Report of the Surgeon General, 2004).

Osteoporosis is costly. In 1998, osteoporosis accounted for over $2.4 billion in direct health care costs in California, and over $4 million in lost productivity resulting from premature death. These costs are likely to be understated as osteoporosis is a "hidden" disease (Max, et. al., 2002). Most of the costs result from hip fractures and other fractures. In fact, only 15 percent of these costs are for people with a diagnosis of "osteoporosis" per se, and, of this group, most of the costs are associated with a secondary, not a primary diagnosis (Max, et. al., 2002).

Osteoporosis is likely to develop when bone loss occurs too quickly, bone replacement occurs too slowly, or if optimal bone mass is not achieved during the bone building years. Characterized by reduced bone mass and weak or brittle bones, osteoporosis usually progresses without any symptoms until a bone breaks – usually at the hip, spine, or wrist – although any bone may be affected. While osteoporosis affects men and women, studies indicate that increased risk is related to being female. Bone loss commonly occurs in women as they age and is accelerated as estrogen levels decline. Women may lose up to 20 percent of their bone mass in the five to seven years following menopause, making them more susceptible to osteoporosis. Men do not have a period of rapid bone loss similar to that experienced by women, but both men and women have similar rates of bone loss as they age (Riggs et. al., 2002). Osteoporosis is more prevalent in White, Hispanic, and Asian women. Recent studies indicated that the incidence of hip fractures among Hispanic women in California appears to be on the rise.

There are key risk factors for osteoporosis beyond age, gender and ethnicity. Other factors that increase risk of developing osteoporosis include having a small bone structure and low body weight, estrogen deficiency as a result of menopause, advanced age, being physically inactive, inadequate calcium and vitamin D consumption, and having a family history of osteoporosis. Osteoporosis can also result from certain medical conditions or treatments that affect the bones. For example, glucocorticoids used in the treatment of asthma, rheumatoid arthritis, or inflammatory bowel disease may accelerate the rate of bone loss. Having a history of falls or fractures can also be an indicator of osteoporosis.

Osteoporosis is not an inevitable part of aging. Building bone mass early in life and preventing bone loss is the most effective way to promote lifelong bone health. The keys to prevention of osteoporosis include achieving optimal bone mass, eating a healthy diet that is rich in calcium and vitamin D, and engaging in appropriate physical activity. The role of calcium and vitamin D, a well-balanced diet and physical activity in promoting and maintaining bone mass is well-documented (DHHS, A Report of the Surgeon General, 2004). Childhood and adolescence in particular are critical stages in the development of healthy bones. The amount of bone gained during this period can equal the amount lost during the remainder of adult life (Bailey et. al., 2000).

What is known about building and maintaining healthy bones and what we are doing about it are at odds. In 2000, only 64 percent of adolescents in California reported any vigorous physical activity in the past week (Inkelas et. al., 2003). Only two-thirds (67 percent) of children ages one year to five years old drank the recommended two or more glass of milk daily (Holtby et. al., 2004). In a recent national survey, only 49 percent of women 45 years and older identified a calcium rich diet as an important tool for bone health and only 55 percent identified regular weight-bearing exercise as a preventive activity (NOF, 2004). Less than 40 percent of women 18 and older reported that a doctor or health provider had talked with them about how to prevent osteoporosis or bone loss, and only 37 percent of women 50 and older had talked with their doctors about how to prevent bone loss (California Department of Health Services, 2002).

"Much of the burden of the disease can potentially be avoided if at-risk individuals are identified and appropriate intervention (both preventive and therapeutic) are made in a timely manner," according to the Report of the Surgeon General. The public and healthcare providers must become aware of the risk factors for osteoporosis and intervene to prevent further bone loss. In a 2004 National Osteoporosis Foundation (NOF) survey, relatively few people, regardless of their age, believe they are at risk of osteoporosis, with only 15 percent saying it definitely or probably will occur. Yet, the majority of women 45 and older, regardless of their age, have at least two risk factors for osteoporosis; nearly six in ten women 45 to 54, 65 percent of those 55 to 64, and 70 percent of those 65 and older are at risk of osteoporosis (NOF, 2004).

Osteoporosis is under-diagnosed. Osteoporosis can only be diagnosed with a bone mineral density test (BMD) which can detect osteoporosis before a fracture occurs, predict the chances of breaking a bone in the future, determine the rate of bone loss, and monitor the effectiveness of osteoporosis treatments. National Health and Nutrition Examination Surveys III (NHANES III) data showed that 66 percent of people over age 50 with osteoporosis are undiagnosed and untreated, 15 percent are diagnosed but untreated, and only 19 percent are both diagnosed and treated (NHANES III, 1998). In 2002, the U.S. Preventive Services Task Force recommended routine osteoporosis screening for all women aged 65 years and older. According to a study funded by Proctor and Gamble, it is estimated that in 2001 only 12 percent of women aged 65 and older with osteoporosis or osteopenia (low bone mass) received a Medicare-reimbursed BMD test to detect the disease.

Osteoporosis usually occurs without any physical signs or symptoms, until a fracture occurs. For Californians over the age of 50, one in two women and one in four men will have an osteoporosis-related fracture in her/his remaining lifetime. Once an initial fracture occurs, there is a five-fold increased risk of a second fracture within one year (Murphy et. al, 2003). Treatment of osteoporosis has been shown to reduce the risk of subsequent fractures 40-60 percent, yet fewer than one in five women (18 percent), 67 years of age and older who suffered a fracture, had a bone mineral density test or took a prescription drug (NCQA, 2004).

Osteoporosis is the leading cause of fractures in older adults resulting in long-term functional impairment, disability, or even early death. At least 90 percent of hip and spine fractures among elderly women can be attributed to osteoporosis (Melton et. al., 1997). Vertebral fractures result in chronic pain, deformity and disability, and lead to an increased number of days per year of limited activity, extended bed rest, and an overall decrease in quality of life (Gold, 2001; Nevitt et. al., 1998). Hip fractures have an even more severe impact, as about 20 percent of people with hip fractures die within one year, while nearly two thirds never regain their preoperative activity status (NIH Consensus Development Panel, 2001).

People with osteoporosis are also at higher risk of developing problems with physical frailty, difficulties with activities of daily living, and may be at risk for reduced quality of life in terms of going out for entertainment and enjoying free time (Kotz et. al., 2004).

Fortunately, there are effective treatments for osteoporosis that reduce fracture risk and promote changes in bone mineral density by reducing bone loss or building bone. Effective treatments for osteoporosis include additional preventive measures, fall prevention strategies, and drug therapy. Increasing calcium and vitamin D in the diet contributes to slowing the rate of bone loss in older adults (Ettinger, 2003). Exercise can increase muscle mass and strength, improve balance and function, and help delay loss of independence (NIH Consensus Development Panel, 2001). FDA-approved drug therapies are effective, safe, and proven to reduce the risk of fracture (FORE, 2002; Gourlay, et. al. 2003; Ettinger, 2003).

Health Disparities and Bone Health

According to the Centers for Disease Control and Prevention (CDC) Office of Minority Health, the demographic changes over the next decade will amplify the importance of addressing disparities in health status. Groups currently experiencing poorer health status are expected to grow as a proportion of the total United States population. California is leading the way with minority populations comprising the majority of the total population in the state.

While osteoporosis is a disease that increasingly affects all populations, there are many lessons to be learned about its prevalence in diverse populations and potential disparities in the long-term impacts it has on older adults within those populations. Osteoporosis researchers, policymakers, and professionals are still learning about the impact of osteoporosis and low bone mass among different cultures and races. Villa (1994) suggests that researchers and program planners must consider racial and ethnic segmentation in addressing osteoporosis risk factors.

Variations exist in bone mineral density and fracture rates, and the morbidity and mortality from fractures also vary among different racial and ethnic groups. For example, women with increased likelihood of developing osteoporosis include those of Asian, Hispanic, or Caucasian ethnicity, those with a personal or family history of fractures, those with a history of smoking, and those with a history of cortisone use (Siris et. al., 2001). Among ethnic minorities impacted by osteoporosis, 65 percent of Asian-American women over age 50 have low bone mineral density (NAWHO, 2003). However, while African-American women appear to be at a lower risk for fractures than Caucasians or Asians, they are at a disproportionate higher risk for adverse outcomes from fractures because of co-morbid illnesses (Bohannon, 1999).

The situation becomes even more complicated for poor and underserved populations. Low birth weight, poor diet and lack of access to fresh foods, limited access to regular physical activity in safe environments creates health disparities from the start of life for many poor children. Limited access to information and quality health care, as well as cultural, economic, and linguistic barriers put underserved people at greater risk for negative outcomes from the disease. The Institute of Medicine Report (IOM) 2002, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, identified significant variation in the rates of medical procedures by race, even when insurance status, income, age, and severity of conditions are comparable. Their research confirmed that minorities are less likely to receive even routine medical procedures and experience a lower quality of health services.

Women reporting that they ever had a bone density test varied by race and ethnicity. About 40 percent of Caucasian women aged 50 and older reported ever having a bone density test, which is significantly higher than among other racial and ethnic groups. Asians were the next most likely to have been tested (30 percent), followed by American Indians and Latino women (25 percent and 18 percent respectively). Only 17 percent of African American women reported ever having a bone density test (Holtby et. al., 2001).

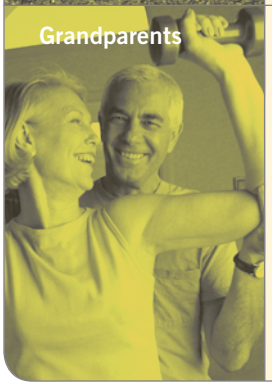
Consistent with the IOM's recommendations and recommendations from California's Strategic Approach to *Eliminating Racial and Ethnic Health Disparities* (2003) for reducing racial and ethnic disparities in health care, California's Action Plan to Prevent Osteoporosis addresses improving awareness of the public and also encourages changes within healthcare systems, among healthcare providers, and promotes public policy change to deal with disparities.

Our Vision:
A Promise of Lifelong Bone Health

Our mission is to eliminate osteoporosis as a public health problem in California

By 2015, California will be the national model for bone health promotion and osteoporosis prevention, education and intervention. Through sustained and on-going effort, California will have tracked substantial progress in eliminating osteoporosis as a public health problem. Public awareness of osteoporosis and a demonstrated increase in preventive behaviors and screening for osteoporosis will result in reduced morbidity and mortality caused by the disease. Model programs and services will be available and accessible across age groups, socioeconomic groups, genders, and cultural, language and ethnic groups. A continuum of prevention, intervention and treatment services and programs will be supported through dynamic partnerships with and among a network of community-based and public and private organizations and institutions. Osteoporosis prevention in California will be systematically linked to federal efforts and integrated into related state and local public health programs reaching various populations. Public and private healthcare system policies will support access to services for all those who need them. Public and private resources for osteoporosis prevention will be leveraged and expanded.

Bone Health for All Ages

Age Group	2005	2015
Children & Youth 	• Uneducated about bone health • Poor nutritional habits • Limited dairy intake • Low physical activity levels • Limited physical education in schools • Weight problems	• Know about importance of bone health and how to grow healthy bones • Have optimal bone health and bone development • Eat a balanced diet high in calcium and vitamin D • Maintain appropriate weight for age and height • Consume appropriate amounts of dairy products for age • Are physically active in or out of school setting • Their healthcare professionals provide bone health information and assess for risk factors
Parents 	• Poorly informed about bone health and bone health promotion • Limited physical activity • Poor nutrition • Overweight • Losing bone mass • Not regularly screened for bone loss	• Know about importance of bone health • Know their risk factors for bone loss • Promote healthy lifestyle behaviors for themselves and their family members • Maintain healthy weight • Have normal Bone Mass Index (BMI) • Eat a calcium-rich diet • Engage in regular weight-bearing physical activity • Their health professionals provide prevention information and assess for-risk factors
Grandparents 	• Unaware of risks and poorly uniformed about their bone health status • Low physical activity levels • Poor nutritional habits • High percentage with symptoms of osteoporosis • High rates of falls and fragility fractures • Limited mobility • Osteoporosis risk assessments are not common healthcare practice	• Know about osteoporosis, their risk factors and their bone health status • Have active lifestyles • Participate in balance and strength training • Homes are “fall-safe” • Eat a healthy, calcium-rich diet • Their healthcare professionals provide osteoporosis prevention information and risk assessment • Osteoporosis interventions are routine when a fracture occurs

Guiding Principles

Four core principles underlie and frame the development and implementation of the Action Plan: Inclusion, Prevention First, Knowledge-Based, and Collaboration.

1. Inclusion

- **Reach out to all populations, age groups and genders**

  Address all populations in California, the most diverse state in the nation. In order to reduce barriers to information and care that contribute to health disparities, The Plan and subsequent actions must recognize and reach out to diverse populations and support culturally and linguistically competent models and programs. While osteoporosis is more prevalent among women, the disease affects many men as well. Prevention must begin early. The Plan must promote and support bone health across the lifespan beginning in childhood when healthy bones are built and continuing into old age when protecting bone health is critical to overall health and quality of life.

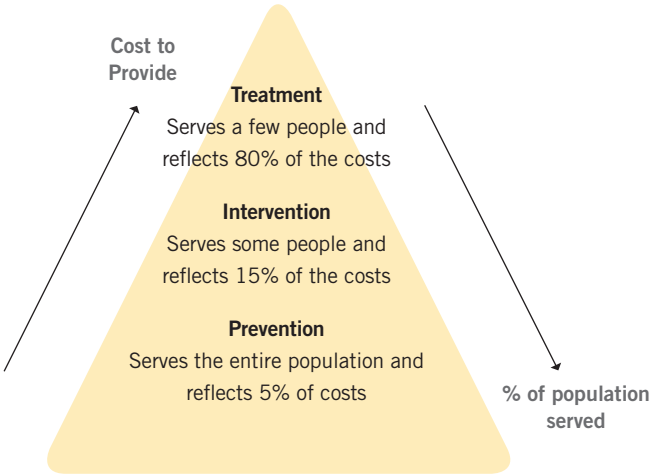
- **Identify, build upon and leverage effective prevention, intervention, and treatment services and programs throughout California and the nation that are geographically, culturally and linguistically competent**

  In order to most effectively reach diverse, monolingual, rural, poor or other harder to reach populations, implementation must build upon successful prevention and intervention models and programs that address health disparities among underserved populations. Linking with trusted community organizations and combining efforts can support more rapid and sustained effort at reducing the disparate burden of the disease on these populations.

2. Prevention First

- **Focus significant efforts on disease prevention and bone health promotion**

  While it is important to provide support to Californians who have osteoporosis or are at-risk of developing the disease, prevention efforts are cost effective and have the greatest potential to lessen the burden of the disease among the entire population over time.



- **Increase awareness of osteoporosis and improve access to resources and information for consumers, organizations, practitioners and policymakers**

  Resources must be committed to raise the level of awareness of osteoporosis prevalence, risk factors and burden on the individual, family and state. Resources and information should support broad-based consumer education, effective program development, cutting-edge intervention and treatment practices and policy development.

3. Base Action On Knowledge

- **Support strategies based on strong science and evidence of sucess**

  To be effective, information, programs and approaches must be based on the most current scientific knowledge about osteoporosis. The Plan must include identification and dissemination of information about research, best practices and model programs, particularly successful community-based approaches that utilize evidence-based strategies for prevention, intervention and treatment of osteoporosis.

- **Assess and evaluate the effectiveness of The Plan in achieving the desired outcomes**

  An evaluation framework must include regular assessments of The Plan's implementation and the impact of the strategies and activities to determine what is and what is not working including the effectiveness and impact on diverse populations. The Plan must be adjusted and realigned based on lessons learned.

- **Incorporate new research, policies, partnership opportunities and changing community contexts into The Plan's implementation**

  To maintain relevance, The Plan must be dynamic and flexible in order to assimilate emerging science, take advantage of opportunities for resources and partnerships, incorporate new policy directions and address national, regional and local trends.

4. Collaboration

- **Support collaboration and dynamic partnerships that link disease prevention and health promotion efforts within California**

  While maintaining clear osteoporosis prevention goals, link efforts with related disease prevention efforts (obesity, diabetes, heart disease, etc.) at the state, regional and local levels to build upon existing resources and support consistent health promotion messages including those regarding appropriate exercise, nutrition and regular screening. Utilize and support existing health and community networks with access to various populations to deliver information, programs and services.

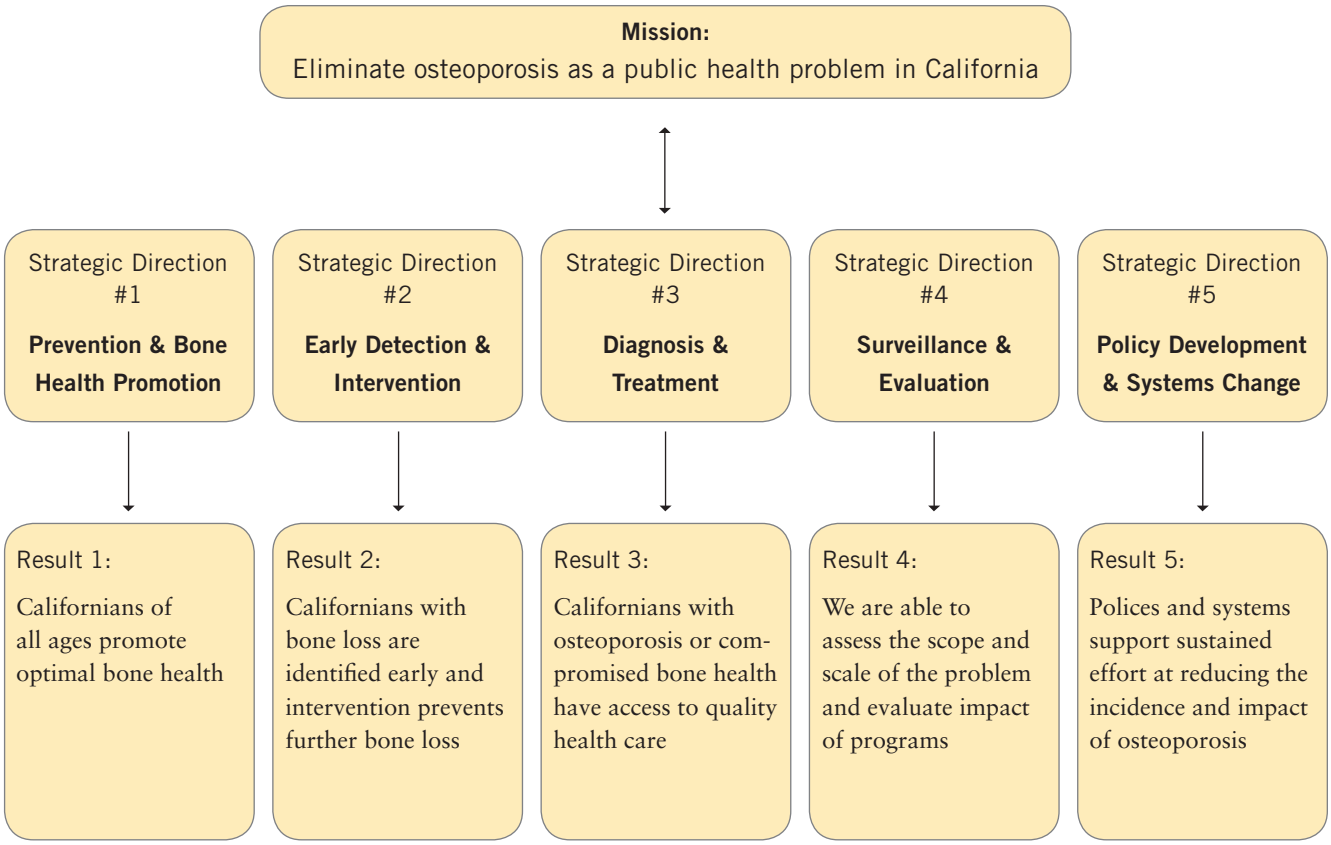
- **Align California's Plan with national osteoporosis goals**

  Align California's Plan with national recommendations and goals described in the 2004 *Bone Health and Osteoporosis: A Report of the Surgeon General* and Healthy People 2010. Alignment provides an opportunity to measure California's success against national indicators and promotes an enriched learning environment and increases opportunities for funding and collaboration with other states and with federal efforts.

Strategic Directions and Desired Results

The diagram below depicts the relationship of the mission of California's Action Plan to five strategic areas of effort and the desired results for each of the five strategic directions. To achieve the desired results, The Action Plan on the following pages details specific goals and strategies for each strategic direction.

Based on a public health approach, The Plan is built upon the outcomes from the multi-disciplinary planning summits attended by experts from around the state, and grounded in a review of published scientific literature.



California's Action Plan To Prevent *Osteoporosis*

Prevention and Bone Health Promotion

According to *Bone Health and Osteoporosis: A Report of the Surgeon General*, "**bone health is critically important to overall health and quality of life**". Yet, the "bone health of Americans is in jeopardy". Although Californians are generally health conscious, many are not well informed about their risks for bone loss. They are unaware of the significant consequences of osteoporosis and do not know what preventive strategies they can employ to promote bone health. Poor nutrition and limited physical activity are compromising the potential for healthy bones among young and old alike.

Much can be done to promote bone health and prevent osteoporosis. By building bone mass early in life and maintaining bone health through appropriate levels of physical activity, calcium and vitamin D intake, and having a healthy lifestyle, many more Californians can sustain optimal bone health throughout life.

One-third of children ages one to five years do not drink the recommended two or more glasses of milk daily

(Health of Young Children in California, 2003)

Our Prevention and Bone Health Promotion Aims

Through implementation of our prevention and bone health promotion recommendations, families, schools and communities will support healthy lifestyles and promote lifelong bone health.

Indicators of our success will be:

- More Californians of all ages and backgrounds meet the nutritional requirements to optimize bone development and health
- More Californians of all ages and backgrounds engage in appropriate regular physical activity to optimize bone development and health
- Healthcare providers include bone health education as part of regular physical examinations for patients of all ages and backgrounds
- Schools include bone health education as part of the health curriculum and support regular physical activity and appropriate bone-healthy eating on campus

Opportunities for Success:

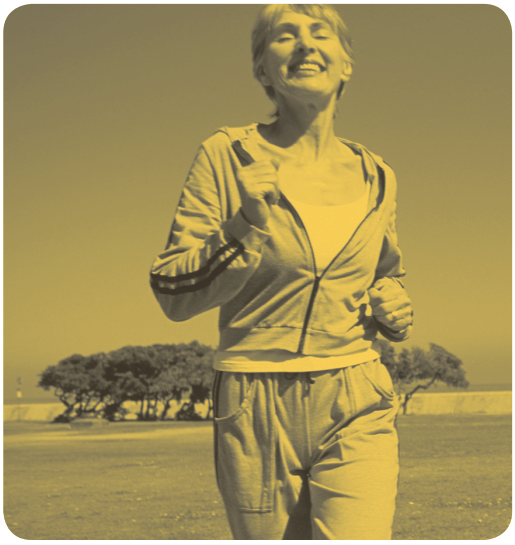
- By coordinating with other chronic disease prevention efforts, we can maximize resources and prevent information overload and confusion among consumers
- The significant public health emphasis on obesity prevention and increasing physical activity correlates with bone health promotion aims
- The growing body of research on osteoporosis and bone health promotion strategies can provide a foundation for California's effort

Challenges to Overcome:

- Effectiveness of prevention strategies is not as easily demonstrated in the short term
- The cultural, linguistic and geographic diversity of California requires a variety of prevention approaches, materials and strategies adapted to specific populations – one size does not fit all
- Traditional healthcare systems emphasize treatment rather than prevention

36% of adolescents ages 12-17 reported no vigorous physical activity in the past week

(Health of Young Children in California, 2003)



The goals and strategies below are recommended to increase bone healthy behaviors among all Californians beginning in youth when bones are being built and lifelong patterns are established.

Strategic Result 1: Californians of all ages promote optimal bone health

	Goal 1	Goal 2	Goal 3
Bone Health Promotion And Osteoporosis Prevention Goals	Increase prevention information, programs and services for consumers of all age groups, backgrounds and ethnicities	Increase collaboration and coordination among prevention efforts at the local, county and state levels	Increase knowledge of healthcare professionals about bone health promotion
Strategies	• Develop and disseminate culturally and linguistically appropriate bone health information through community networks having access to diverse populations • Conduct public education campaigns to promote and maintain healthy bone development beginning in infancy and continuing throughout the life span • Disseminate information to consumers about risk factors for bone loss and osteoporosis • Create a resource bank of evidence-based, culturally, age and gender appropriate prevention information accessible to consumers • Encourage schools to provide health education about healthy eating and exercise to build bone mass and implement nutritional and physical education programs on site • Educate the media about osteoporosis through press kits and briefings	• Link with state, county and community-based health promotion programs to incorporate information about bone healthy lifestyle choices (exercise and adequate calcium and vitamin D intake) • Increase communication about osteoporosis prevention among state departments and county public health agencies • Incorporate osteoporosis prevention and bone health messages in materials developed and disseminated by related agencies with similar target populations • Use innovative approaches to deliver prevention messages to diverse communities • Support capacity building at the local level through resources, technical assistance and statewide networking • Expand Osteoporosis Month activities at the local and state levels	• Develop and disseminate consistent evidence-based guidelines for bone health including nutrition, physical activity and fracture prevention for all age groups • Implement education and awareness campaigns about bone health across the lifespan that target health care professionals • Develop web-based access to information and resources for healthcare professionals • Provide patient information and bone health promotion materials for pediatricians and primary care providers to disseminate to patients • Recommend validated bone health assessments as part of regularly scheduled physical examinations • Advocate for bone health curriculum as part of professional education for healthcare providers including pharmacists, physical therapists and other ancillary care providers

Early Detection and Intervention

Early identification of Californians with bone loss is critical to preventing further bone loss, osteoporosis and debilitating fractures. Early detection can be achieved through regular screening for risk factors. If identified early, bone loss can be slowed through interventions including lifestyle changes (diet and physical activity) and medications.

Screening can include osteoporosis education, assessment for indicators and risk factors for bone loss or poor bone health such as height loss, poor diet and exercise practices, or underlying diseases. This can include bone density testing when indicated. Studies show that screening is underutilized particularly among Californians who are uninsured or underinsured, or are part of an ethnic minority group. Along with education, screening can be conducted in community settings to reach out to isolated populations.

In order to expand access to screening and bone health support, coordination among organizations and networks is increasingly recognized as necessary and cost effective. Through collaboration, local partners including public health agencies, community-based organizations and healthcare institutions and professionals can increase outreach to consumers, improve availability of screening for all those at risk of osteoporosis, and strengthen intervention practices that can prevent further bone loss. Education and screening efforts must overcome cultural barriers and isolation of disadvantaged populations.

Our Early Detection and Intervention Aims

Through implementation of our early detection and intervention recommendations, our aim is to significantly reduce the incidence of osteoporosis and debilitating fractures caused by fragile bones.

Indicators of our success will be:

- Osteoporosis education and screening for bone loss and osteoporosis risk factors are accessible to all Californians in community settings
- Californians screened for bone loss increase calcium and vitamin D intake and regular weight-bearing physical activity
- Healthcare providers regularly assess for risk factors of bone loss and osteoporosis, and work with community-based screening and intervention programs
- Those at risk are referred to nutrition counseling, physical activity and fall prevention programs
- Intervention services are available to all Californians in community settings

Opportunities for Success:

- Coordination with minority-serving organizations can reach more isolated populations
- Collaborative local models for education, outreach and screening are emerging
- There is growing attention to the benefits of healthy aging promoting more proactive consumers

Challenges to Overcome:

- Local capacity and resources for screening and outreach are limited
- Increasing diversity of population requires educational tools and intervention strategies consistent with the language and culture of multiple populations
- Medical reimbursement for screening and interventions is limited thus creating disparities among those unable to pay for intervention services out of pocket

The goals and strategies below are recommended to improve early detection of bone loss and intervention to prevent osteoporosis.

Strategic Result 2: Californians with bone loss are identified early and intervention prevents further bone loss

	Early Detection And Intervention Goals	Strategies
Goal 1	Increase access to risk assessment and screening for all Californians	• Encourage pharmacies, grocery stores, and other local sites to conduct bone density screening with other screening or health-related events (e.g., cholesterol screenings, immunization clinics) • Link with minority-serving organizations to conduct screening events • Develop protocols and linkages with healthcare professionals for follow-up and monitoring of those identified as at-risk
Goal 2	Increase availability of follow-up support services and interventions to prevent further bone loss	• Support community-based intervention programs that include follow-up assessment, nutrition and physical exercise counseling and fall prevention • Improve collaboration among healthcare systems, community organizations and local public health agencies to connect healthcare providers with community-based intervention programs • Expand access to intervention programs for underserved, underinsured populations through collaboration with organizations serving diverse groups • Increase community-based fall prevention programs that include safety assessments of homes and communities
Goal 3	Increase knowledge of Californians with reduced bone mass density to prevent further bone loss and/or fractures	• Conduct multilingual, multicultural community-based educational campaigns to encourage risk assessment and screening • Use targeted marketing to reach populations less likely to be reached through conventional methods of information dissemination • Support coordination with local coalitions that emphasize early disease detection • Promote collaborative models that link prevention and early detection efforts across “diseases” • Conduct campaigns to disseminate osteoporosis and fracture risk assessment tools
Goal 4	Increase knowledge and tools of healthcare professionals to identify and intervene with patients with reduced bone mass density	• Educate healthcare providers and payors about current screening guidelines • Disseminate validated risk assessment tools that include calcium and vitamin D intake, fall and fracture history, physical activity type and level, family and medical history, and screening intervals • Conduct education campaigns to promote utilization of risk assessment tools by healthcare professionals • Distribute risk assessment education materials for patients to physicians, pharmacists and other allied healthcare providers • Develop web-based access to osteoporosis best practices, risk assessment tools and intervention strategies

Diagnosis and Treatment

Osteoporosis threatens not only the quality of life, but also the lives of many older Californians. It is the leading cause of fractures in older adults resulting in long-term functional impairment, disability, or even early death. A woman over the age of 50 has a 50 percent chance of having an osteoporotic fracture in her lifetime, and a man over 50 has a 25 percent chance (NOF, 2004). Nearly 20 percent of people with hip fractures die within one year and nearly two thirds never regain their preoperative activity status (NOF, 2004).

"Too little of what has been learned has been applied in practice" (Bone Health and Osteoporosis: A Report to the Surgeon General, 2004).

Despite the likelihood and dangers of the disease, most of those at high risk of the disease go undiagnosed and untreated. Less than one in five women who had a fracture were assessed or treated for osteoporosis within 12 months of fracture (NCQA, 2004).

At least 90% of hip and spine fractures among elderly women can be attributed to osteoporosis (NOF).

Diagnosis of osteoporosis and appropriate therapeutic interventions could reduce fractures and subsequent fractures, improve bone density and support quality of life for those with osteoporosis. Diagnostic methods are available. FDA-approved treatments exist for those who have osteoporosis or who are at high risk of developing the disease. These treatments are effective, safe, and proven to reduce the risk of fracture, particularly when combined with fall prevention and lifestyle changes.

Our Diagnosis and Treatment Aims

Through implementation of our diagnostic and treatment recommendations, our aim is to significantly reduce incidence of untreated osteoporosis, osteoporotic fractures and subsequent fractures.

Indicators of our success will be:

- Proactive healthcare models for diagnosis and treatment of osteoporosis and secondary osteoporosis are implemented widely
- All patients with fragility fractures are referred for osteoporosis assessment
- Californians diagnosed with osteoporosis have access to medications and appropriate therapeutic interventions
- Disease management programs including mobility and pain management improve quality of life for those diagnosed with osteoporosis
- Fall prevention education, dietary and physical activity counseling are integrated into treatment of all those diagnosed with osteoporosis, secondary osteoporosis or incidence of fragility fracture

Opportunities for Success

- Health insurance coverage for bone mineral density testing is increasingly available when indicated
- Osteoporosis treatment guidelines are available
- Application of HEDIS measures (a set of standardized performance measures to reliably compare the performance of managed health care plans) and reporting requirements can increase treatment and assessment
- Community-based programs can work with healthcare providers to identify those at risk and provide fall prevention, and diet and activity counseling and programs
- There is increased national attention to health disparities among diverse populations and the poor, along with recommendations to improve healthcare practices to prevent unequal treatment

Challenges to Overcome

- Urgency of other diseases and misperceptions about osteoporosis as a normal part of aging may hamper attention to the disease by patients and healthcare professionals
- Lack of a standardized bone scan report and consensus on diagnostic guidelines creates confusion among providers
- There are no current requirements on bone health and osteoporosis in healthcare professional education
- There are not enough healthcare professionals with cultural and linguistic competence to serve California's diverse population

The goals and strategies below are recommended to improve diagnosis and treatment of those with osteoporosis.

Strategic Result 3: Californians with osteoporosis or compromised bone health have access to quality health care

	Goal 1	Goal 2	Goal 3
Diagnosis And Treatment Goals	Build a proactive health care model for osteoporosis diagnosis and treatment	Build a proactive health care model for identification and treatment of post fragility fracture patients with osteoporosis	Increase the availability of disease management services for patients with osteoporosis
Strategies	• Develop continuing education courses for physicians, nurses, and other healthcare providers to improve diagnosis of patients with osteoporosis or low bone mass • Disseminate osteoporosis treatment guidelines that include therapeutic and preventive protocols • Support universal assessment of all "red flag"/high risk patients including bone density testing and fracture assessments • Support assessment of those diagnosed with osteoporosis for other secondary causes of the disease • Recommend universal interventions with patients to increase calcium and vitamin D intake, appropriate exercise and provide fall prevention education • Use multi-media strategies (newsletters, CDs, internet) to distribute and update provider educational information and tools • Establish web-based resource site and link healthcare providers to available community and medical resources for disease management and other services (safe exercise, fall prevention and nutrition) • Develop tools for healthcare professionals to provide education to patients on the disease • Support availability of disease management programs to improve quality of life for those diagnosed, including mobility support, pain management, and support groups	• Support universal osteoporosis assessment of all fracture patients • Develop and provide specific treatment guidelines and protocols for post fracture care, including osteoporosis screening, medications, referral to fall prevention, dietary and exercise counseling and other ancillary services • Conduct coordinated, multimedia education efforts directed toward healthcare professionals (orthopedists, emergency room doctors, pharmacists and primary care), health plans, teaching programs and patients to promote post fracture protocols • Promote community-based osteoporosis and fracture education among local specialty providers, primary care providers, emergency room physicians, first responders, nurses, and rehabilitation providers • Advocate for policies and protocols that directly link orthopedists and emergency room doctors with patients' primary care providers through hospital discharge planners	• Conduct coordinated, multimedia education campaigns for people with osteoporosis using simple, effective messages • Develop uniform patient education tools that can be used by providers to discuss disease management, fall prevention and strategies for improving strength, balance and nutrition • Assure patient education materials are produced in multiple languages and repeated with adequate frequency • Work with the private sector to develop culturally-appropriate materials demonstrating the efficacy of treatments and importance of adherence to treatment in slowing the progression of osteoporosis • Support programs to increase access to affordable medications and therapies for underinsured

Surveillance and Evaluation

There is insufficient data about the full extent and burden of osteoporosis in California. Most of the information available is for women over the age of 50 years old. Data linked to national figures do not capture the picture for California, a state at the forefront of a demographic shift where minority groups currently comprise the majority of the population. In California, few resources are allocated for osteoporosis surveillance and no specific strategy for data collection exists. Some risk factor data, such as physical activity levels and nutritional behaviors, are found in California's Behavioral Risk Factor Surveillance Survey (BRFSS) and other surveillance tools, such as the California Women's Health Survey (CWHS) and California Health Interview Survey (CHIS). State coordination with national efforts dedicated to osteoporosis surveillance is just beginning with implementation of the CDC-approved optional osteoporosis module in the 2005 BRFSS.

Surveillance is a critical tool that grounds development and alignment of policies and practices; reveals research opportunities; identifies program and service gaps; illuminates disparities among Californians caused by cultural differences, access to healthcare and other social and environmental issues; promotes awareness and understanding of the problem, and generates support for sustained action to prevent osteoporosis. Accurate data are needed to understand the extent and burden of osteoporosis in California as a whole and also within various age, socioeconomic, race/ethnicity, and geographic (rural vs. urban) populations. Baseline and trend data related to osteoporosis can inform and assist in planning, initiating and evaluating specific interventions and the overall Action Plan.

Our Surveillance and Evaluation Aims

Through implementation of our surveillance and evaluation recommendation, our aim is that program and policy development and allocation of resources are based on sound evidence derived from scientifically collected data and program assessment.

Indicators of our success will be:

- Scientific data collection strategies are implemented throughout California reaching all populations and improving our understanding of the prevalence of the disease and risk factors for the disease
- More meaningful osteoporosis data are available to inform development and assess impact of interventions, programs and strategies
- Data on the economic impact of osteoporosis are available to support policy advocacy
- Data is collected and reported regularly to consumers, practitioners and policymakers to raise awareness and encourage action

Opportunities for Success:

- Healthy People 2010 provides goals and indicators for osteoporosis
- It is potentially possible to utilize existing California surveillance resources such as CHIS, BRFSS, and CWHS to develop baselines for osteoporosis risk factors
- Large scale data collection instruments such as the National Health and Nutrition Examination Surveys (NHANES) have osteoporosis components and screening data that could be useful for osteoporosis surveillance models and baseline data

Challenges to Overcome:

- There is limited standardized methodology for collecting bone health and osteoporosis data on Californians
- Risks for osteoporosis are not as uniquely attributable to osteoporosis as are risk factors to other diseases (e.g., smoking to lung cancer)
- The challenges of population level data collection and assessment are compounded by the diversity of the California population with its multiple languages and difficult to reach populations
- The geographic diversity and sheer size of the state must be taken into account when developing a surveillance plan

The goals and strategies below are recommended to improve surveillance of osteoporosis and bone health among Californians and evaluate the impact of programs and strategies.

Strategic Result 4: We are able to assess the scope and scale of the problem, measure performance and evaluate impact of programs for diverse populations and age groups

	Goal 1	Goal 2	Goal 3
Surveillance And Evaluation Goals	Increase availability of evidence-based osteoporosis information, resources, best practices and data for health care professionals, community-based organizations and consumers	Use existing surveillance tools to implement a statewide data collection system to assess and evaluate progress on reducing the burden of osteoporosis on Californians	Assess quality and improvement in bone health education, interventions, treatment and patient support

Strategies	• Develop a web-based statewide osteoporosis clearinghouse that provides surveillance information to healthcare professionals, community based organizations and providers, policymakers, and consumers
	• Identify sources and materials for inclusion in the clearinghouse and implement a formal multidisciplinary review process
	• Link the osteoporosis clearinghouse to other chronic disease sites
	• Market availability of the clearinghouse to the target audiences
	• Regularly update the clearinghouse to include current information
		• Develop and test survey questions and measures appropriate to diverse ages and populations in California including:
		  • Consumer knowledge, attitude and behavior related to osteoporosis
		  • Risk factors for osteoporosis, e.g., fractures, smoking, etc.
		  • Screening rates
		  • Identification and treatment of disease
		  • Access to healthcare, availability of screening and perceived healthcare provider strategies related to osteoporosis
		• Pilot assessment measures by incorporating questions into existing health surveys such as the Behavioral Risk Factor Surveillance Survey and California Women's Health Survey
		• Incorporate osteoporosis questions in nutrition and school health surveys targeting youth
		• Develop and disseminate surveillance reports on the status of osteoporosis in the state
		• Establish a California Health and Nutrition Examination Survey to collect a scientific sampling of the population in coordination with other chronic departments and organizations. Utilize a mobile sampling model to conduct surveys and testing throughout the state and with harder to reach populations
			• Develop and conduct surveys of consumers and community-based public health organizations to assess availability and access to bone health information, education and screening services
			• Implement a set of osteoporosis questions on the California Health Information Survey (CHIS)
			• Develop and conduct healthcare provider surveys to assess practices related to prevention, identification and treatment of osteoporosis
			• Review and disseminate treatment outcomes for California utilizing information gathered from the Health Plan Employer Data Information Set (HEDIS)
			• Regularly report California's success in meeting the Healthy People 2010 goals for osteoporosis
			• Assess quality of life and disability indicators for those with osteoporosis
			• Using surveillance data and surveys, conduct periodic review of California's Action Plan to Prevent Osteoporosis and realign resources to address gaps

Policy Development and Systems Change

In 1998, osteoporosis accounted for over $2.4 billion in direct health care costs, and over $4 million in lost productivity resulting from premature death in California. Yet, even these numbers do not tell the whole story as evidence of osteoporosis as reported in medical records is often masked with a more primary diagnosis of hip fracture or other diseases. As California's population ages, the staggering costs of osteoporosis are bound to rise.

Reducing the burden of osteoporosis on families, healthcare systems and the state requires both policy changes and resource commitments. Policymakers must become aware of the costs of osteoporosis and support a public health approach to bone health promotion and evidence-based healthcare practices that improve early detection and treatment of osteoporosis. Government and public and private healthcare systems must prioritize resources to prevent and treat osteoporosis and work together to eliminate health barriers for underserved populations. Policies should support environments where bone health promotion and preventive, diagnostic and treatment services are available and accessible to all. Alignment and coordination of potentially complementary programs, activities, policies and services could produce cost-effective programs and more user-friendly systems for consumers.

Our Policy Development and Systems Change Aims

Through implementation of our policy and systems change recommendations, bone health promotion and osteoporosis intervention and treatment will be accessible to all Californians.

Indicators of our success will be:

- Access to education, screening and treatment for all Californians is supported through adequate funding
- Healthcare systems and insurers support prevention and early intervention services
- Bone health education is integral in parent education, schools, healthcare settings and underserved communities
- Health disparities among uninsured/underinsured Californians are reduced

Opportunities for Success:

- There is increasing awareness of the need to address osteoporosis as a current and emerging health crisis
- *Bone Health and Osteoporosis: A Report of the Surgeon General* provides key recommendations for integrating systems of care and changing policies to support prevention
- California's osteoporosis stakeholders are ready to implement osteoporosis prevention and education programs

Challenges to Overcome:

- There are many competing demands for support and many urgent needs that require legislative attention, funding and policy changes
- Building and sustaining advocacy efforts requires public and private collaboration to organize and implement programs and policies
- Prevention often takes a back seat to treatment in resource allocation

The goals and strategies below are recommended to develop policies and systems that support lifelong bone health and access to quality osteoporosis intervention and treatment.

Strategic Result 5: Policies and systems support sustained effort at reducing the incidence and impact of osteoporosis on Californians

	Goal 1	Goal 2	Goal 3
Goals	Promote collaboration and coordination of public and private agencies, community organizations, industry and healthcare providers at the state, regional and local levels to support bone health and expand resources to address osteoporosis	Implement legislation and policies that build and sustain an environment where bone healthy options for diet and exercise, as well as needed preventive, diagnostic and treatment services are available and accessible to all Californians	Establish policies that institutionalize evidence-based bone health and treatment practices
Strategies	• Convene the California Osteoporosis Network on an annual basis to review statewide efforts to promote bone health • Work with local representatives to convene and coordinate action and advocacy through cross-disciplinary statewide and local efforts • Develop public/private partnerships to expand and leverage available resources and promote bone health • Fund community-based cross-disciplinary, culturally competent community-based education and awareness campaigns, screening and policy advocacy	• Secure guaranteed state funding for the California Osteoporosis Prevention and Education (COPE) program • Increase insurance coverage or reimbursement for screening and early intervention support services • Coordinate with other chronic disease prevention programs at the state level to integrate bone health and osteoporosis prevention messages • Collaborate to improve nutritional standards in schools • Reinstate regular physical education in primary and secondary schools and colleges • Promote community-based funding for osteoporosis screening, diagnosis and treatment • Implement policies to reduce barriers to osteoporosis screening, diagnosis and treatment services by underserved, uninsured and limited English-speaking populations • Advocate for reimbursement mechanism for education, nutrition or other intervention therapies such as fall prevention counseling • Fund osteoporosis research on new approaches to diagnosis and treatment and effects of population-based models	• Compile and disseminate osteoporosis research, evidence-based guidelines and models to communities and health care professionals • Develop consistent evidence-based guidelines for bone health including nutrition, physical activity and fracture prevention for all age groups • institute standardized bone health curriculum in medical education programs • Coordinate with state and local agencies to develop and support policies that link accreditation and licensing to fracture prevention efforts. • Inaugurate bone health education in primary and secondary schools and colleges • Develop policies for first responders to refer patients who fall to fall prevention clinics • Establish validated bone health assessments that includes calcium and vitamin D intake, falls, fracture history, physical activity type and level, and screening intervals • Advance research and evaluation of community-based strategies to promote bone health and increase interventions with at-risk and underserved populations

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